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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/678,296	10/03/2000	Toru Koizumi	35.C14851	5740

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EXAMINER

AGGARWAL, YOGESH K

ART UNIT PAPER NUMBER

2622

DATE MAILED: 11/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/678,296

Applicant(s)

KOIZUMI, TORU

Examiner

Yogesh K. Aggarwal

Art Unit

2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 September 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 31-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 31-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09/01/2006 has been entered.

Response to Arguments

2. Applicant's arguments filed 09/01/2006 have been fully considered but they are not persuasive.

Examiner's response:

3. Applicant argues with regards to newly added limitation that Nakamura does not teach a selection means for reading out a signal amplified by said signal amplification means to a signal line; a first transferring means for transferring the electric charges of said photoelectric conversion unit to said charge-voltage conversion unit; a first selecting means for reading out a first signal to a signal line by said selecting means; signal is read out; a reset means for resetting the charge-voltage conversion unit after the first a second transferring means for transferring the electric charges of said photoelectric conversion unit to said charge-voltage conversion unit; a second selecting means for reading out a second signal to the signal line by said selecting means. The Examiner respectfully disagrees.

4. Nakamura teaches that transfer transistor 22 and address transistor 24 are controlled by control signals ϕ read and ϕ addr respectively (col. 5 lines 45-52). Nakamura also teaches at col. 5 line 54-col. 6 line 2 that after the readout of the accumulated charges i.e. pulse ϕ read, a pulse

ϕ addr follows in order to transfer the signal charge to the vertical line 28 after it is amplified by the amplifying transistor 23. Therefore a pulse ϕ addr reads out the charges on a basis of electric charges transferred by the pulse ϕ read.

Nakamura teaches

a selection means for reading out a signal amplified by said signal amplification means to a signal line (col. 6 lines 67-col. 6 line 2 teach signal V_{sig} is amplified by the amplifying transistor 23 to the vertical signal line 28 when the address signal ϕ addr turns on the address transistor);

a first transferring means for transferring the electric charges of said photoelectric conversion unit to said charge-voltage conversion unit (e.g. figure 7 shows reading the charges accumulated in the photoelectric device after the reset signal);

a first selecting means for reading out a first signal to a signal line by said selecting means (As explained above in second paragraph, at col. 5 line 54-col. 6 line 2 that after the readout of the accumulated charges i.e. pulse ϕ read, a pulse ϕ addr follows in order to transfer the signal charge to the vertical line 28 after it is amplified by the amplifying transistor 23).

a reset means for resetting the charge-voltage conversion unit after the first a second transferring means for transferring the electric charges of said photoelectric conversion unit to said charge-voltage conversion unit See figure 7 reset pulse follows the reading);

a second selecting means for reading out a second signal to the signal line by said selecting means ((Similar to the first reading, a second readout pulse ϕ read transfers the dark signals are readout by the ϕ addr pulse, See col. 8 lines 9-20).

The last limitation of adding the first and second signal read out to the signal line is taught by Merrill, wherein the output signals readout from the charge-voltage conversion unit are individually retained (col. 8 lines 51-54) and a horizontal scan is carried out after adding the output signals or while adding the output signals (col. 9 lines 30-36).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 31-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al. (US Patent # 6,930,722) in view of Merrill (US Patent # 5,892,541).

[Claim 31]

Nakamura teaches a method of driving a solid image pickup device (figure 2) comprising a photoelectric conversion unit (21), a charge-voltage conversion unit (26) for converting electric charges from the photoelectric conversion unit into voltage signals, a signal amplification means (23) for amplifying the voltage signals generated in the charge-voltage conversion unit, and a charge transfer means (22) for transferring photoelectric charges from the photoelectric conversion unit to the charge-voltage conversion unit (col. 5 lines 45-52).

transferring electric charges generated in the photoelectric conversion unit during one accumulation period to the charge-voltage conversion unit by the charge transfer means [The one accumulation period for transferring charges is defined as (See figure 7) starting from first reset

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i.e. when the shutter opens and the photoelectric device starts accumulating charges until the time mechanical shutter is opened again to start accumulating charges again];

wherein the transferring step comprises a first transferring step (figure 7 shows reading the charges accumulated in the photoelectric device) and a second transferring step (second reading after the reset signal), a first signal is read out on a basis of electric charges transferred by the first transferring step (after the first readout for reading the accumulated charges i.e. pulse ϕ read, a pulse ϕ addr follows in order to transfer the signal charge to the vertical line 28, See col. 5 line 64-col. 6 line 2. Therefore a pulse ϕ addr reads out the charges on a basis of electric charges transferred by the pulse ϕ read), the charge-voltage conversion unit is reset after the first signal is read out (See figure 7 reset pulse follows the reading) and a second signal is read out on a basis of electric charges transferred by the second transferring step after the charge-voltage conversion unit is reset (Similar to the first reading, a second readout pulse ϕ read transfers the dark signals are readout by the ϕ addr pulse, See col. 8 lines 9-20).

Nakamura fails to teach adding the first and second signal read out to the signal line. However Merrill teaches wherein the output signals readout from the charge-voltage conversion unit are individually retained (col. 8 lines 51-54) and a horizontal scan is carried out after adding the output signals or while adding the output signals (col. 9 lines 30-36).

Therefore taking the combined teachings of Nakamura and Merrill it would have been obvious to one skilled in the art to have been motivated to have adding the first and second signal read out to the signal line in order to increase the dynamic range.

[Claim 32]

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Merrill teaches wherein the output signals readout from the charge-voltage conversion unit obtained by the division and the readout are individually retained (col. 8 lines 51-54) and a horizontal scan is carried out after adding the output signals or while adding the output signals (col. 9 lines 30-36).

[Claim 33]

Nakamura teaches an intermediate readout operation by performing the resetting of the charge-voltage conversion part and reading out output signals amplified by the amplification means to the signal output line (See figure 7 reset pulse follows the reading, col. 5 line 64-col. 6 line 2, See col. 8 lines 9-20, Also See Examiner's notes regarding claim 1).

[Claim 34]

Claim 34 is an apparatus claim corresponding to method claim 31. Therefore it has been analyzed and rejected based on method claim 31.

[Claim 35]

Nakamura discloses an embedded type photodiode used for photoelectric conversion unit (figure 3, photodiode 31).

[Claims 36 and 37]

Nakamura teaches the solid-state image pickup device of claim 34 and a signal processing circuit for processing output signals from the solid image pickup device (figure 13). Nakamura also teaches an optical system for focusing for focusing a ray of light to the solid-state image pickup device (col. 5 lines 55-57).

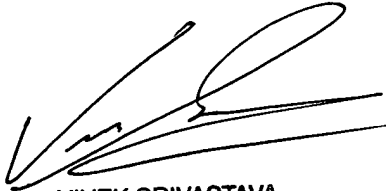
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yogesh K. Aggarwal whose telephone number is (571) 272-7360. The examiner can normally be reached on M-F 9:00AM-5:30PM.

7. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivek Srivastava can be reached on (571)-272-7304. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

8. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

YKA
November 10, 2006



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